

Lewis structures

Electron dot diagrams

- Single bonds
- Double bonds
- Triple bonds

Types of solids

Types of bonding

- Metallic
- Molecular
- Covalent network
- Ionic

Type of particles (atoms, ions, molecules)

Attractive forces between particles

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Shapes of molecules – name / drawing

Shapes of molecules

Bond angles

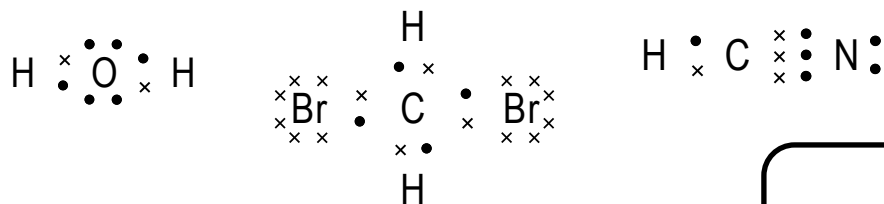
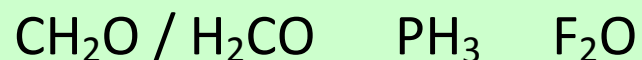
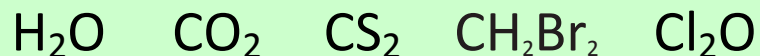
Polar bonds

Polar or non-polar molecules

How properties relate to the bonding

- Electrical conductivity
- Solubility in polar and non-polar solvents
- Hardness
- Malleability
- Melting & boiling points
- etc

Lewis structures

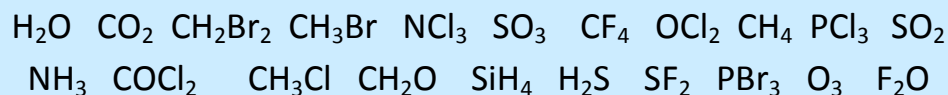


Types of solids

metallic	molecular	covalent network	ionic
Cu	S ₈	C (diamond)	MgO
Zn	Cl ₂	C (graphite)	MgCl ₂
Ag	CO ₂	SiO ₂	CaCl ₂
K	H ₂ O (ice)		KI, KCl
Pb	I ₂		Na ₂ O
	SO ₃		Al ₂ O ₃
	PCl ₃		NaCl, LiCl
	SCl ₂		CuCl ₂

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Shapes of molecules – name / drawing



linear, angular (v-shaped), trigonal planar, trigonal pyramidal, tetrahedral

180°, 120°, 109°

Electronegativity F > O > N/Cl > S... >.. C.. > ...H

Polar bonds – difference in EN of bonded atoms gives rise to δ- and δ+. Polar molecules: possess polar bonds & dipoles don't cancel out due to asymmetrical molecular shape

How properties relate to the bonding

- why metals are easily shaped and are good conductors of electricity
- why ionic substances are brittle, have high m.pts, many are soluble in water but not in non-polar solvents, and why they conduct when aqueous solution or molten but not as solids
- why graphite is slippery and can conduct electricity
- why ionic, metallic and covalent network solids have high m.pts but molecular solids have low m.pts.
- etc